

through the shafts ; but even had they been closed, it seems unquestionable that the report, and of course the sound of a train, would travel through the earth*.

I should have prosecuted these researches further, especially in reference to the velocity with which these tremors are propagated through the ground, but that Lord Auckland's letter to me led me to hope that all danger to the Royal Observatory was past, never to return. I therefore contented myself with reducing the observations I had made. As, however, the Railway Moloch seems never likely to be satiated with victims, and as the observatories of Oxford, Armagh, and again that of Greenwich have been marked for sacrifice, it seems to me a duty to place before the public the facts which had been collected at a great expense of labour, and some pecuniary outlay.

They were made without any bias, or any motive but a desire to ascertain the actual truth ; and in addition to their bearing on practical astronomy, I hope that they may not be without use in reference to some other departments of science.

January 7, 1864.

Dr. W. A. MILLER, Treasurer and Vice-President, in the Chair.

The following communications were read :—

- I. "Extract of a letter to General Sabine from Dr. OTTO TORELL, dated from Copenhagen, Dec. 12, 1863." Received December 18, 1863.

The Swedish Diet has given the necessary money to complete the survey for the measurement of an Arc of the Meridian at Spitzbergen.

When the proposal was submitted to the Diet by our Government, at the instance of the Academy of Sciences at Stockholm, it was passed without opposition in the three first houses of the Diet (viz. the Nobles, the Clergy, and the Burghers). In the fourth house (the Peasants), only one Member opposed the proposal, on the ground of the high amount of the Budget. He was replied to by seven or eight other Members, advising that the house should not oppose a grant which had for its object to advance science. In

* An interesting fact was observed with the maroons. They were fired vertically from a mortar twenty feet from the observatory, and had fuses which gave them flight for six seconds. The mercury showed the usual intense disturbance when the mortar was fired, and also at the explosion of the maroons in the air. But there was also an intermediate disturbance which I cannot explain but by supposing it to be as it were an echo of the earth-wave caused by the discharge of the mortar and reflected from *the masonry of the tunnel*. I showed it to the Marquis of Blandford, to Lord Alfred Churchill, and to Professor James McCullagh ; unfortunately the nights Dr. Robinson and Mr. Warburton accompanied me to Watford, not a single star was visible. On repeating the experiments at Campden Hill, nothing of the sort occurred.

consequence the money was also voted by the House of Peasants. There is every reason to expect that the question of the practicability of the undertaking will be settled in the next summer, and I hope that the result may be satisfactory.

The Diet has with the same liberality given the necessary money for the Swedish share in the proposed large Middle-European Triangulation from Palermo to Trondjem, and has also made a grant of the money which will be required to erect a new Astronomical Observatory at the University of Lund. I expect therefore that the excellent astronomer at the University, Mr. Möller, will read with intense interest the correspondence regarding the Melbourne Telescope, which even to me has been of great interest.

II. "Results of hourly Observations of the Magnetic Declination made by Sir Francis Leopold M'Clintock, R.N., and the Officers of the Yacht 'Fox,' at Port Kennedy, in the Arctic Sea, in the Winter of 1858-59; and a Comparison of these Results with those obtained by Captain Maguire, R.N., and the Officers of H.M.S. 'Plover,' in 1852, 1853, and 1854, at Point Barrow." By Major-General SABINE, R.A., President. Received December 21, 1863.

(Abstract.)

When about to undertake a voyage to the Arctic Sea in 1857, in the yacht 'Fox,' in search of the ships of Sir John Franklin's expedition, Captain M'Clintock requested that the Royal Society would supply him with such information and instructions as might enable him to make the best use of the opportunity which the voyage was likely to afford for the prosecution of magnetical and meteorological observations.

As the present communication is limited to a discussion of the hourly observations of the declination made by Captain M'Clintock and his officers from December 1, 1858 to March 31, 1859 inclusive, the portion of the instructions with which Captain M'Clintock was supplied which relates to such observations forms an appropriate introduction. It is followed by a full statement from Captain M'Clintock himself of the circumstances under which an observatory was established on the ice at a distance of 220 yards from the ship, and hourly observations maintained during five months of the arctic winter, being only discontinued when, on the return of a more genial season, the services of both officers and sailors were required in prosecuting the more immediate objects of the expedition.

On the return of the 'Fox' to England, the observations were sent, through the Royal Society, to the Woolwich establishment for the reduction and publication of magnetic observations. The results of the observations treated of in this paper are discussed in comparison with those obtained from similar observations made by Captain Maguire and the officers of H.M.S. 'Plover' at Point Barrow, on the shore of the Arctic